Customer Success Is Our Mission

Raytheon JPS Communications
IWCE 2007

Dealer New Product Introduction & Training
ACU-2000 IP / IP-Based Interconnect

Product Introduction

ACU-2000 IP

ACU-2000 IP

- The ***ACU-2000 IP*** is an IP-Based Interoperability Gateway

- The ***ACU-2000 IP*** is a suite of network capabilities:
  - Linking of Radios over IP Networks
  - Interface Radios to SIP Devices over IP Networks
  - Remote Channel Change over IP Networks
  - Control of Large-Scale Interoperability Systems over IP Networks

- The ***ACU-2000 IP*** can leverage the feature rich environment of SIP telephony

- Like the ACU-1000, the ***ACU-2000 IP*** is modular, completely scalable and field configurable to meet the customers requirements

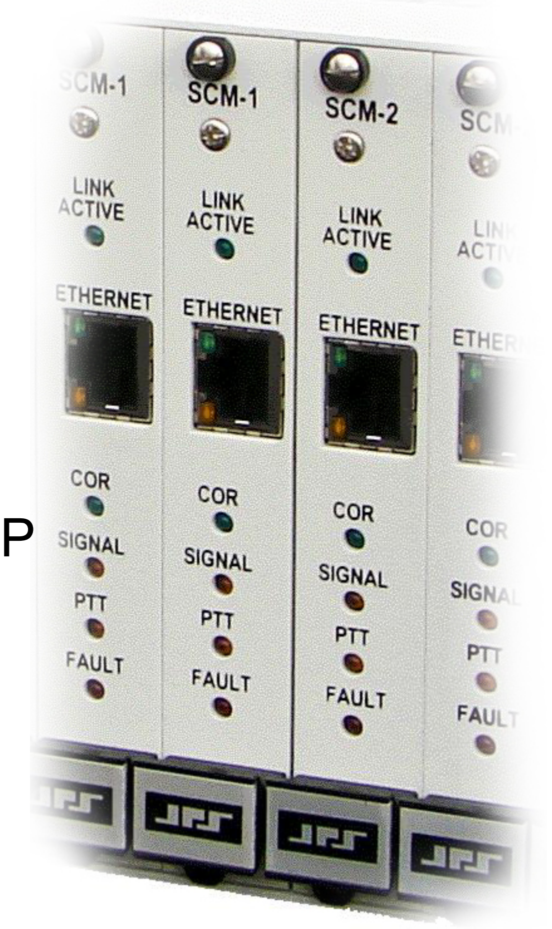
ACU-2000 IP

SCM / SIP Channel Module

ACU-2000 IP

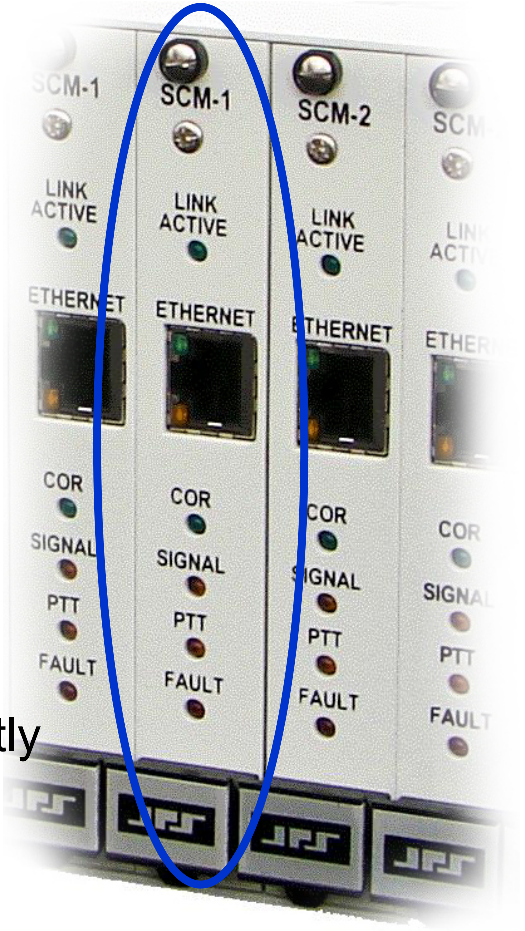
- Heart of the ACU-2000 IP is the SCM - *SIP Channel Module*
  - The SCM module provides an interface to other SIP compatible devices such as:
    - SIP Telephones
    - SIP Softphones
    - ATA (Analog Telephone Adapters)
    - SIP WiFi Phones
    - Internet and PSTN Gateways

  - The SCM module can take advantage of rich telephony functions that were once reserved for IP telephone users:
    - Conferencing
    - Interactive Voice Response
    - Automated Attendent
    - Voice Mail
    - Unified Messaging



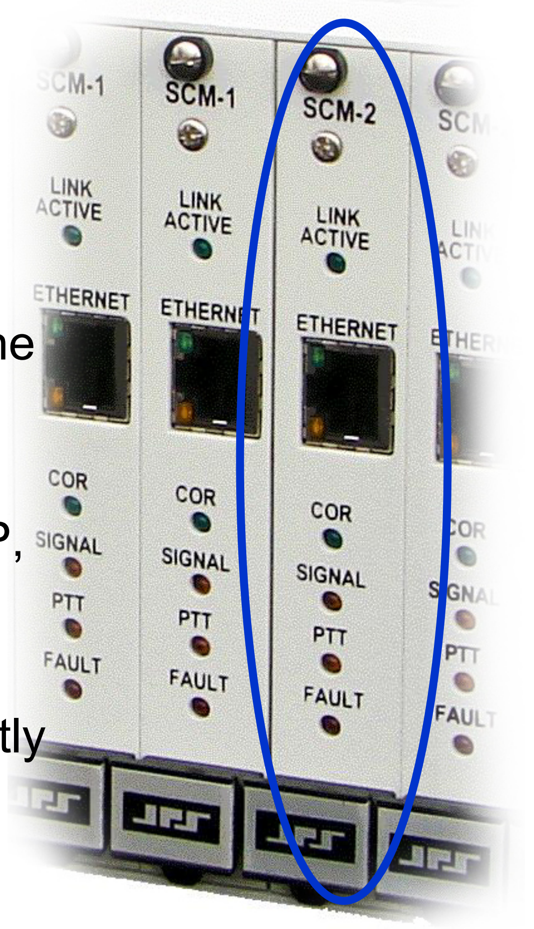
ACU-2000 IP

- There are two versions of the SCM Module
  - SCM-1 *Standalone Version*:
    - The SCM-1 is a SIP end-point
    - Derives its audio directly from the rear-panel DB-15 connection at the rear of the ***ACU-2000 IP*** chassis
    - The SCM-1 does not interact with the internal bus of the ***ACU-2000 IP*** chassis, so it cannot be cross-connected any module within the chassis
    - Audio is converted to RTP data and presented directly to the IP network through its RJ45 connection



ACU-2000 IP

- There are two versions of the SCM Module
  - SCM-2 *Hybrid Version*:
    - The SCM-2 is also a SIP end-point
    - Derives its audio from the internal audio bus of the ***ACU-2000 IP***, the DB-15 connection at the rear of the chassis is disabled
    - The SCM-2 can be cross-connected to the DSP-2 IP, PSTN-1 IP, HSP-2 IP, LP-1 IP module
    - Audio is converted to RTP data and presented directly to the IP network through its RJ45 connection



ACU-2000 IP

Two Versions of the ACU-2000 IP for Two Architectural Solutions

ACU-2000 IP

- The SIP communications capabilities of the ACU-2000 IP can be configured in either of two versions:
  - LOCAL INTEROPERABLITY GATEWAY VERSION
  - SERVER-BASED INTEROPERABILITY VERSION

Same Chassis, Same Modules, Different Solutions

ACU-2000 IP

Local Interoperability Gateway Version

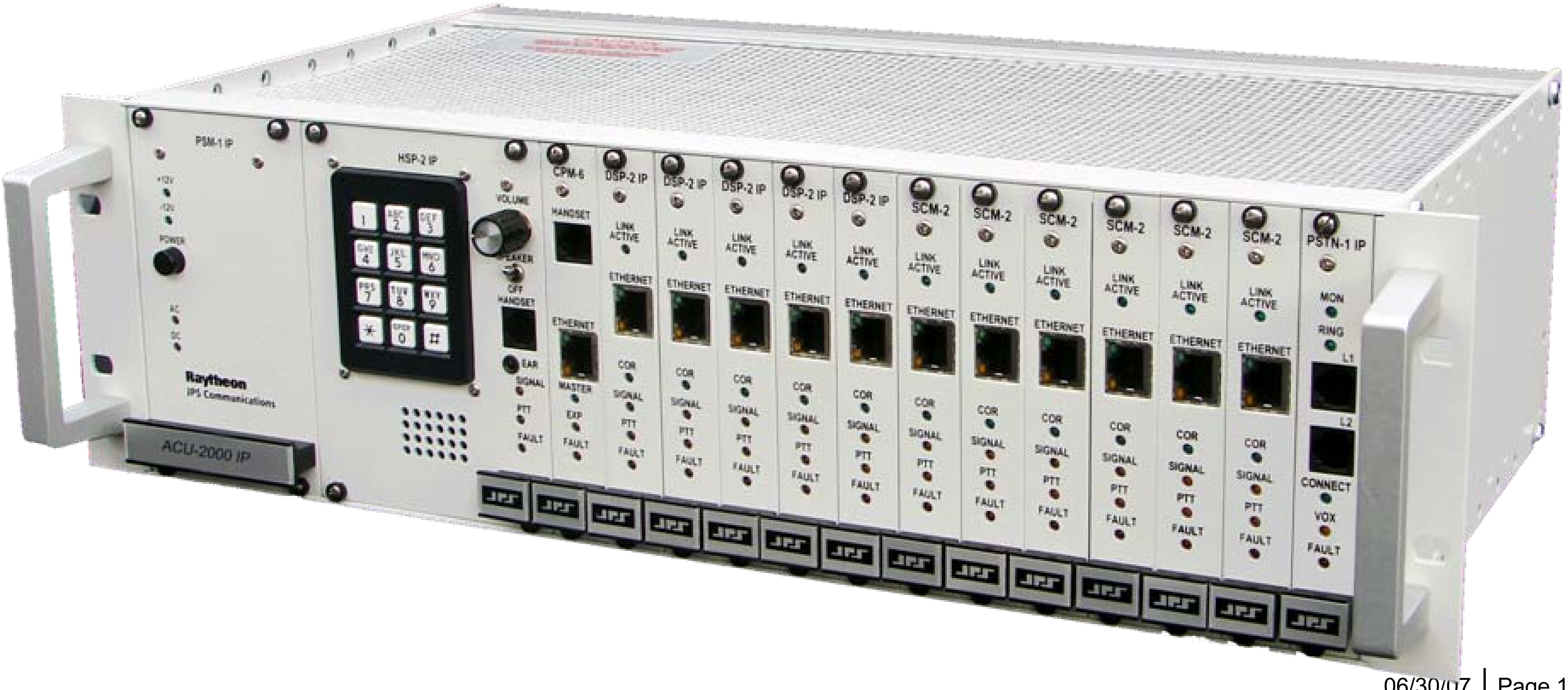
ACU-2000 IP

- Local Interoperability Gateway Version
  - The ACU-2000 IP operates similar to the ACU-1000 which links disparate communication assets and systems, locally within the chassis
  - This Distributed Architecture is the most robust form of interoperability
  - Distributed Architecture is immune to:
    - ☐ Network Failure
    - ☐ Server Failure
  - This version allows the linking of land-mobile radio communications to other SIP devices, even SIP PBX's

Local Interoperability Gateway Version

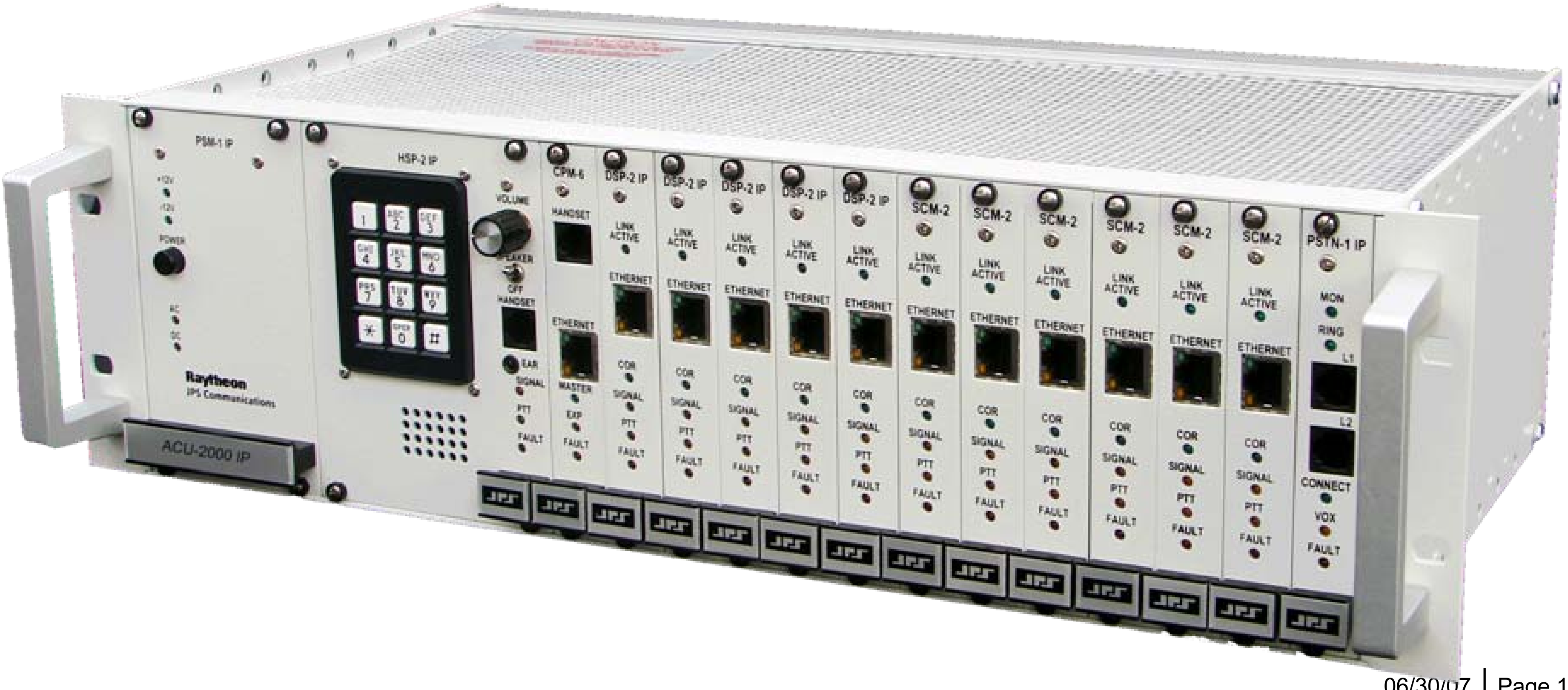
– This version has all of the features of the existing ACU-1000 system, *plus the ability to connect to SIP endpoints via the SCM-2 module*

– Interoperability occurs locally within the ACU-2000 IP Chassis



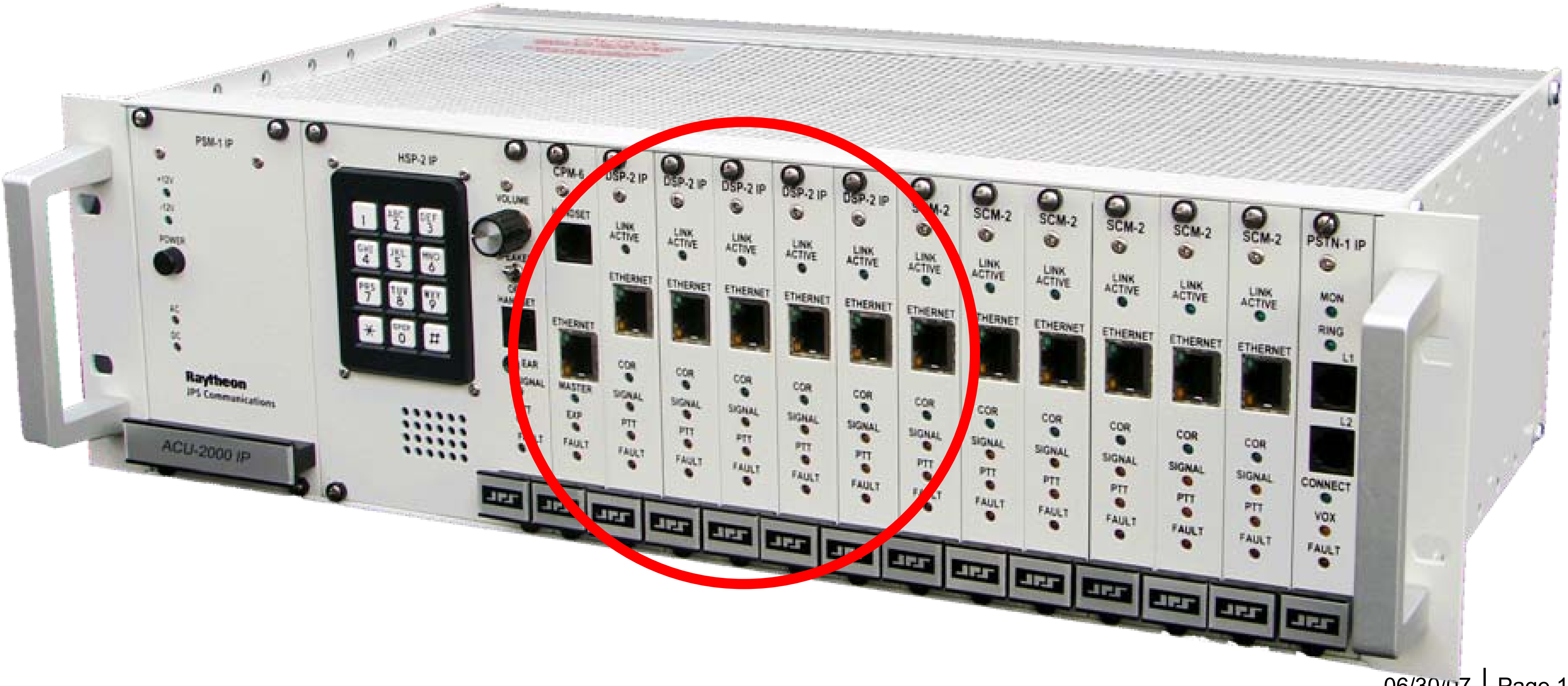
Local Interoperability Gateway Version

- The ACU-2000 IP requires the CPM-6 Control Processor Module
- Modules can be intermixed: DSP-2 IP, SCM-2, PSTN-1 IP, LP-1 IP
- Remote audio links compose of RoIP and/or SIP/RTP



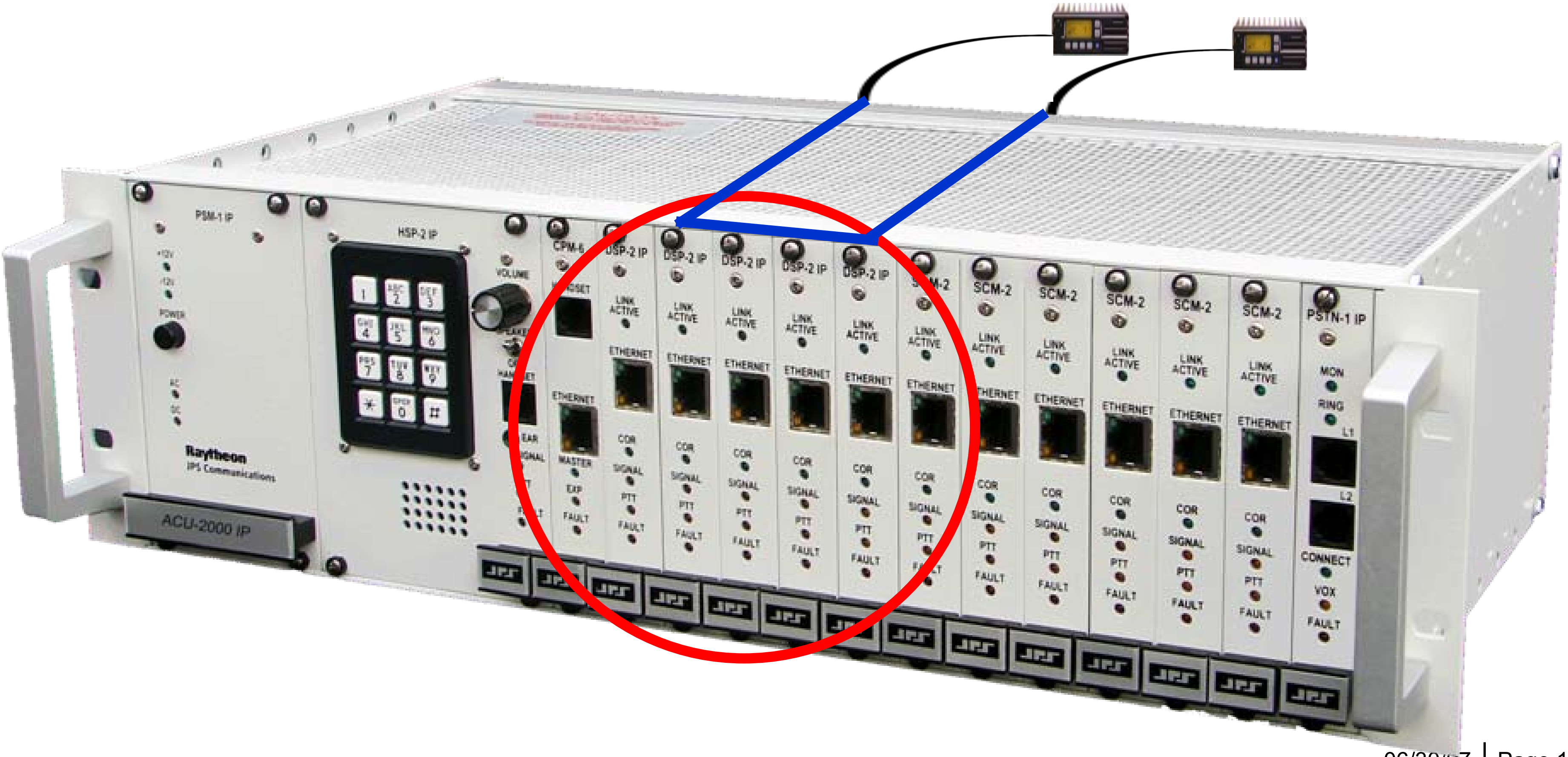
Local Interoperability Gateway Version

- The DSP-2 IP modules can function in three user configurable modes:
  - Classic Mode
  - Hybrid Mode
  - Standalone Mode



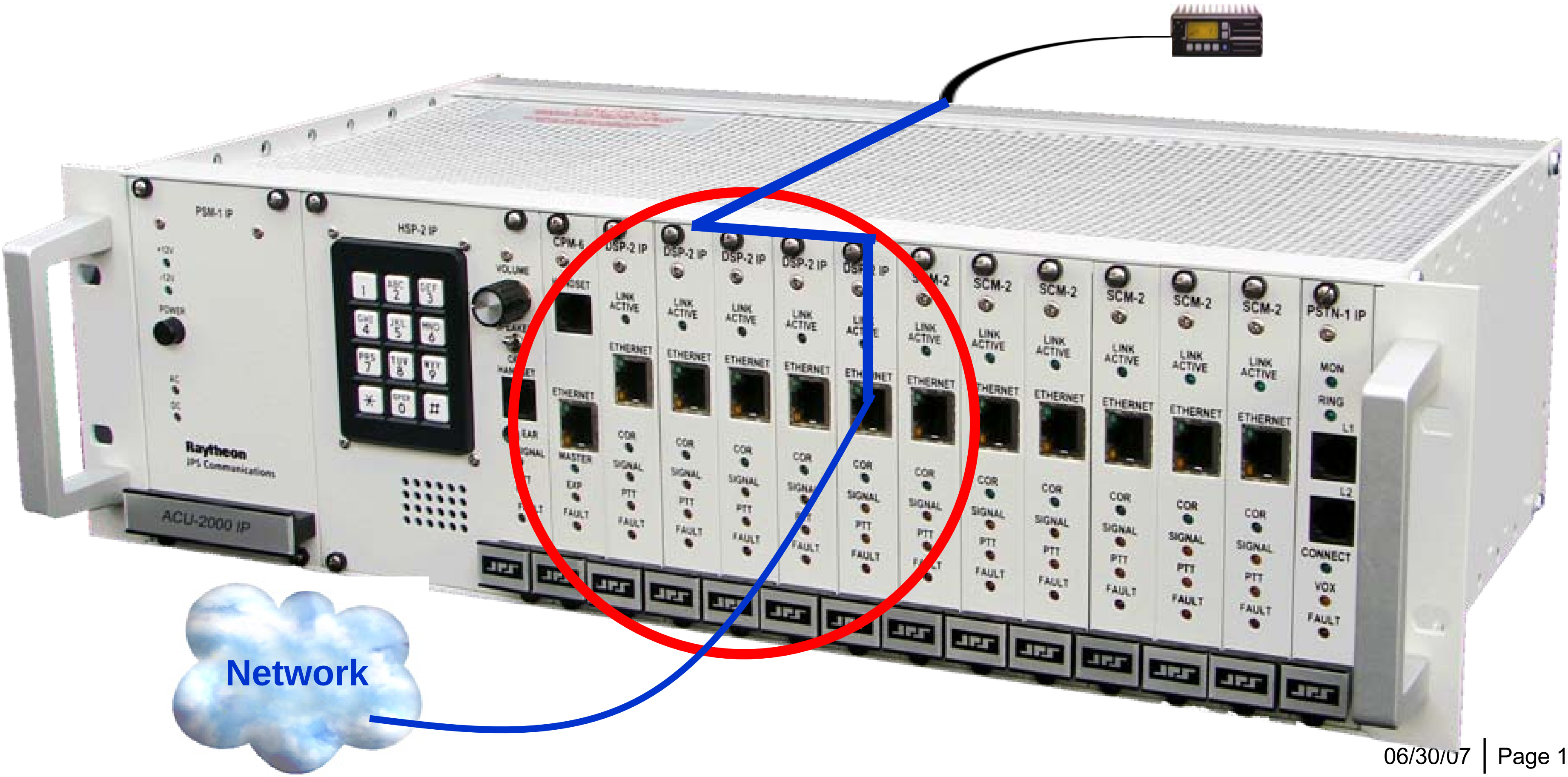
Local Interoperability Gateway Version

- DSP-2 IP Classic Mode: Derives audio from radio or 4-wire devices connected to the rear DB-15 connection directly behind each module, and then routes the audio to other modules



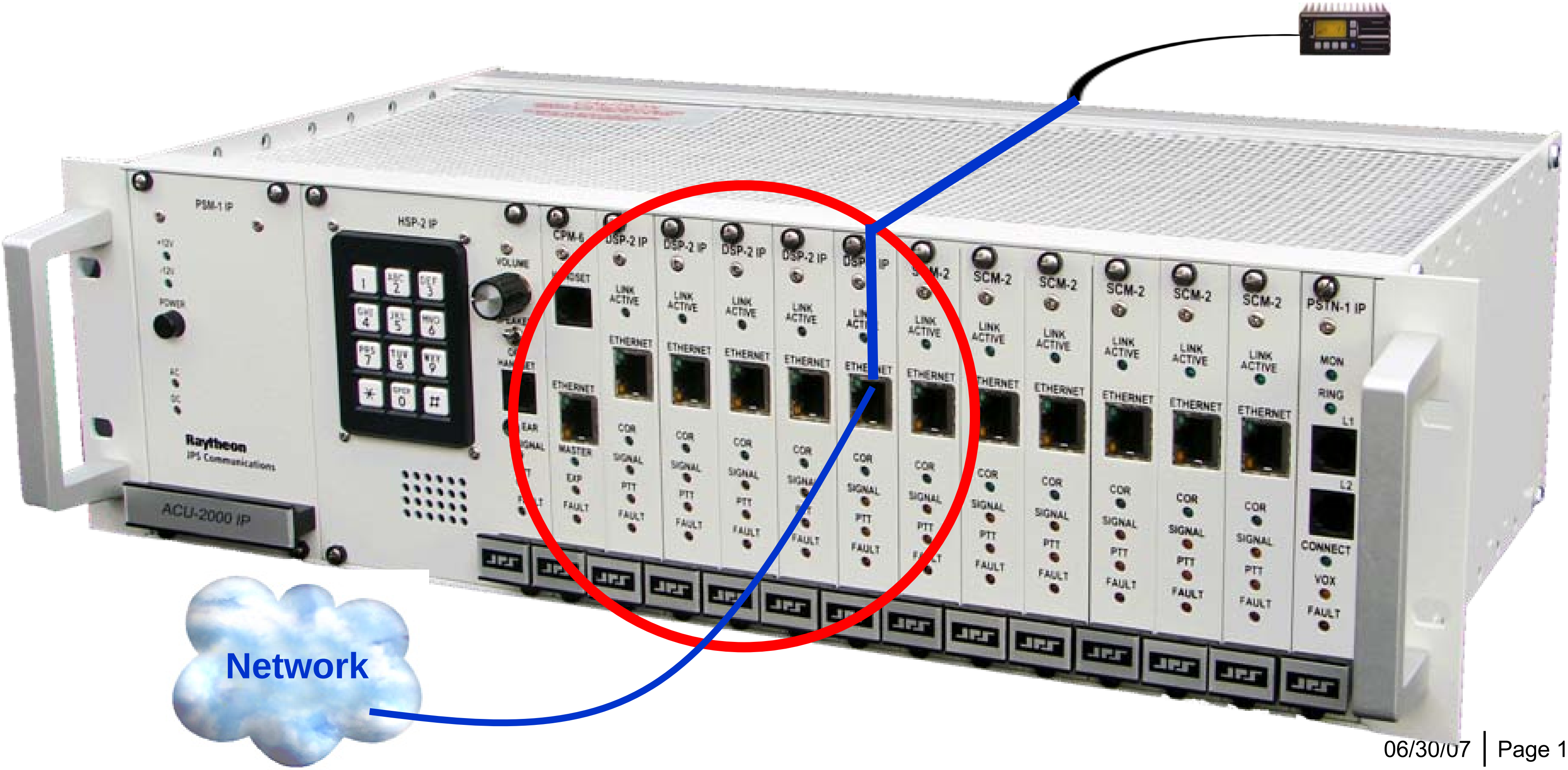
Local Interoperability Gateway Version

- DSP-2 IP Hybrid Mode: Derive their audio from the internal audio bus, digitizes the audio into UDP packets to be sent to the IP network (RoIP)
  - This RoIP data can be transported over the IP network to other Hybrid DSP, NXU-2A, PCNXU for remote interoperability capabilities



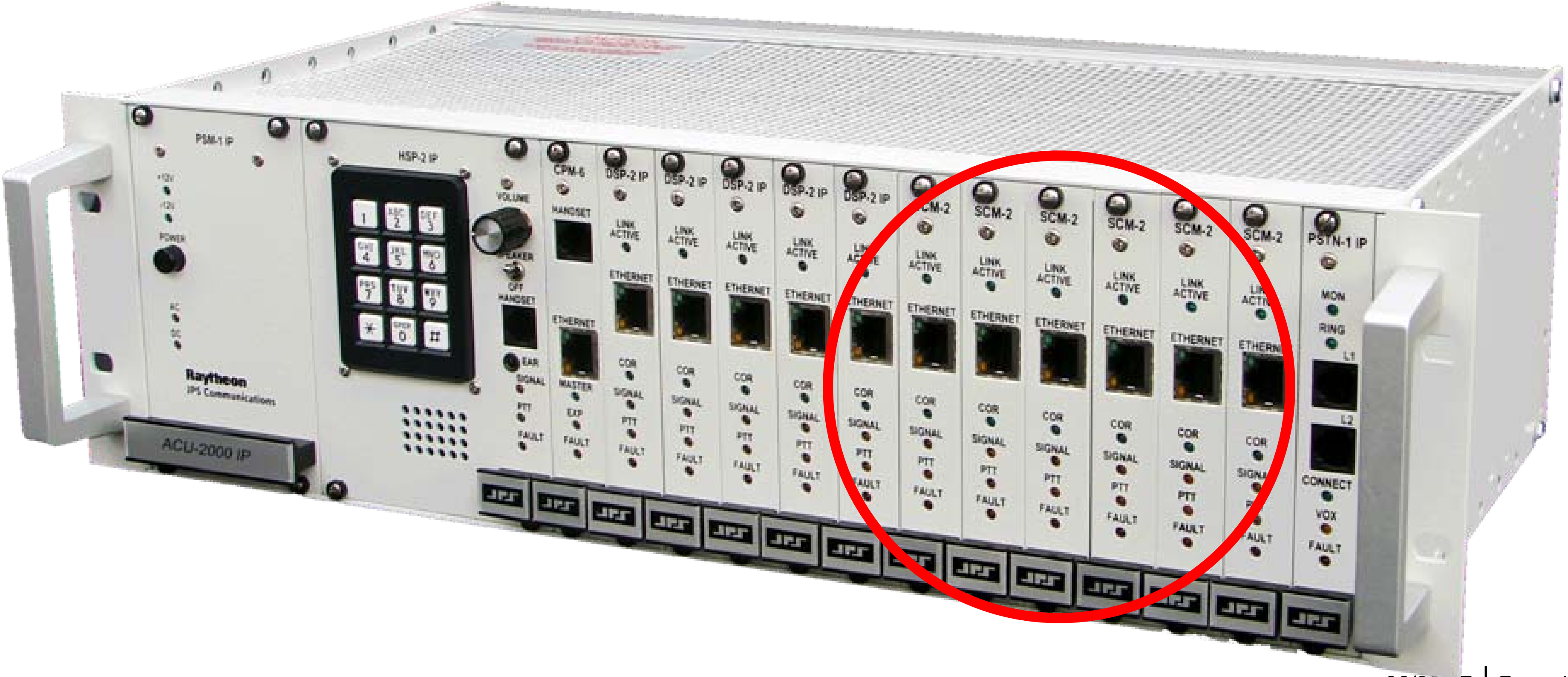
Local Interoperability Gateway Version

- DSP-2 IP Standalone Mode: Derives audio from radio or 4-wire devices connected to the rear DB-15 connection directly behind each module, digitizes the audio into UDP packets to be directly sent to the IP network (RoIP)



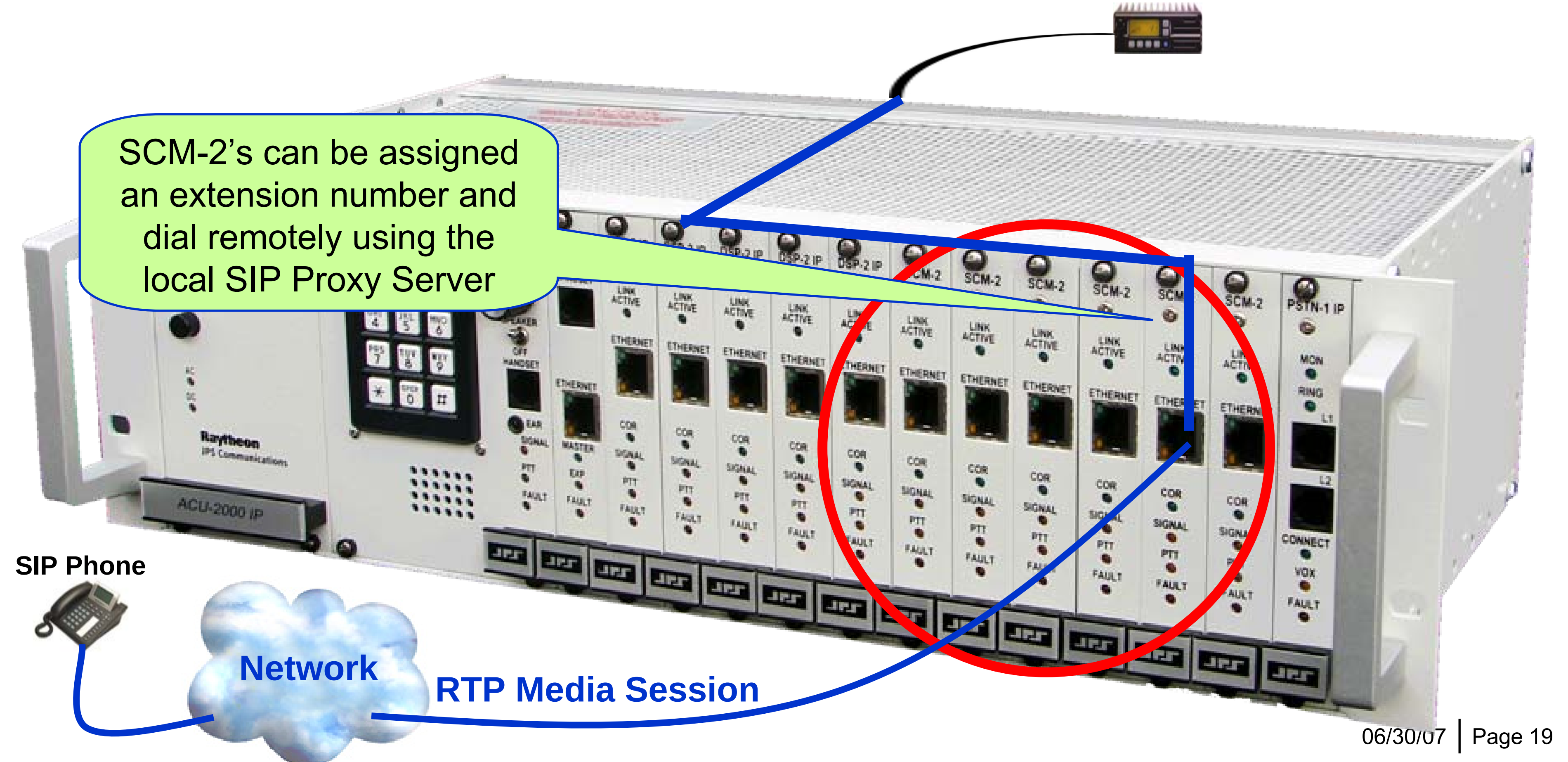
Local Interoperability Gateway Version

- SCM-2 Module: becomes a SIP end point
  - Similar to a SIP phone, the SCM-2 can be assigned a SIP Extension number
  - Other SIP devices can initiate a SIP connect to the SCM-2 and create a SIP media session



Local Interoperability Gateway Version

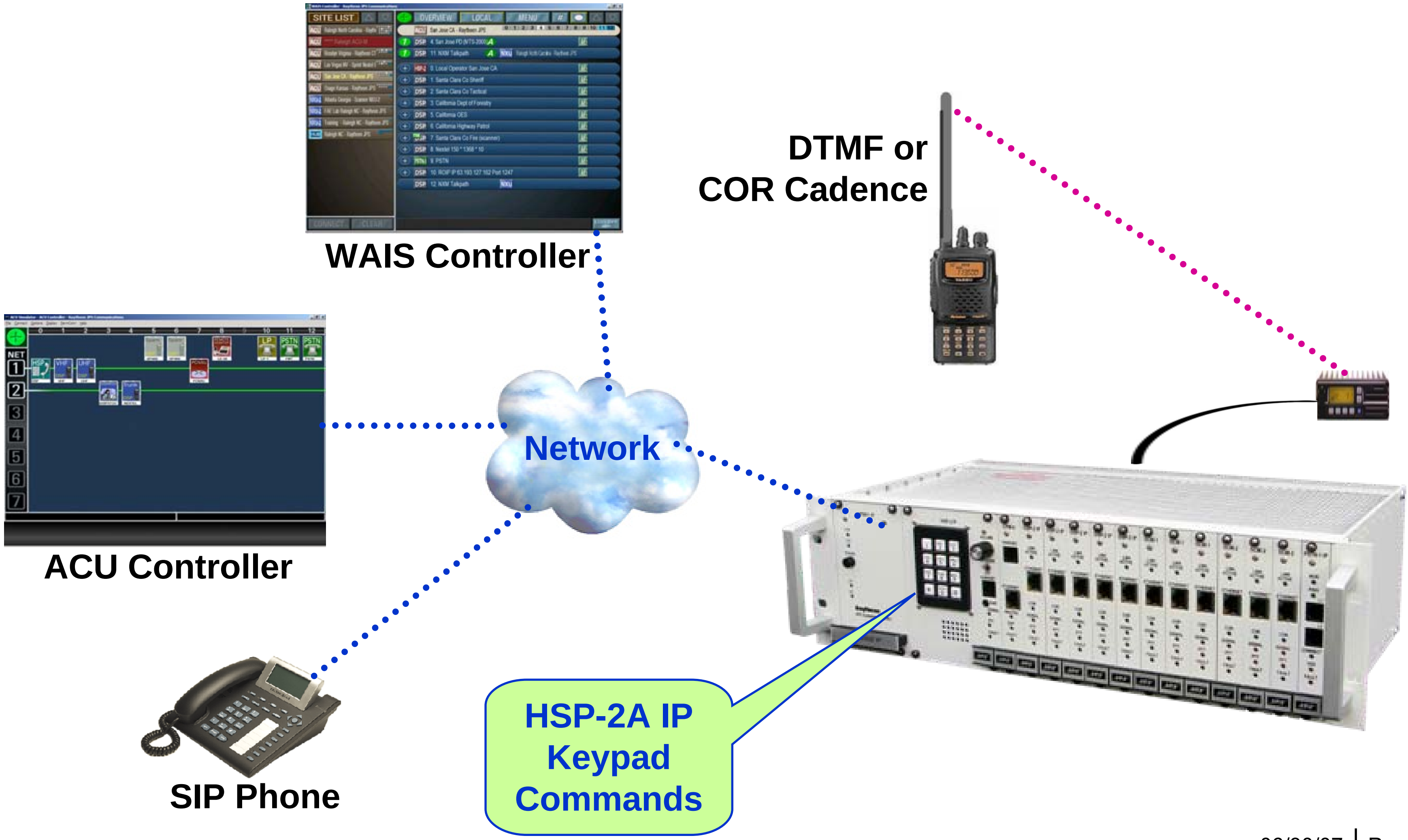
- SCM-2 Module: Once engaged in a SIP media session (RTP) the SCM-2 can be cross-connected to another module in the ACU-2000 IP for interoperability purposes



SCM-2's can be assigned an extension number and dial remotely using the local SIP Proxy Server

Local Interoperability Gateway Version

– Control of the ACU-2000 IP / Local Gateway Version:



WAIS Controller

DTMF or
COR Cadence

ACU Controller

Network

SIP Phone

HSP-2A IP
Keypad
Commands

ACU-2000 IP

Advantages of a Distributed System

Local Interoperability Gateway Version

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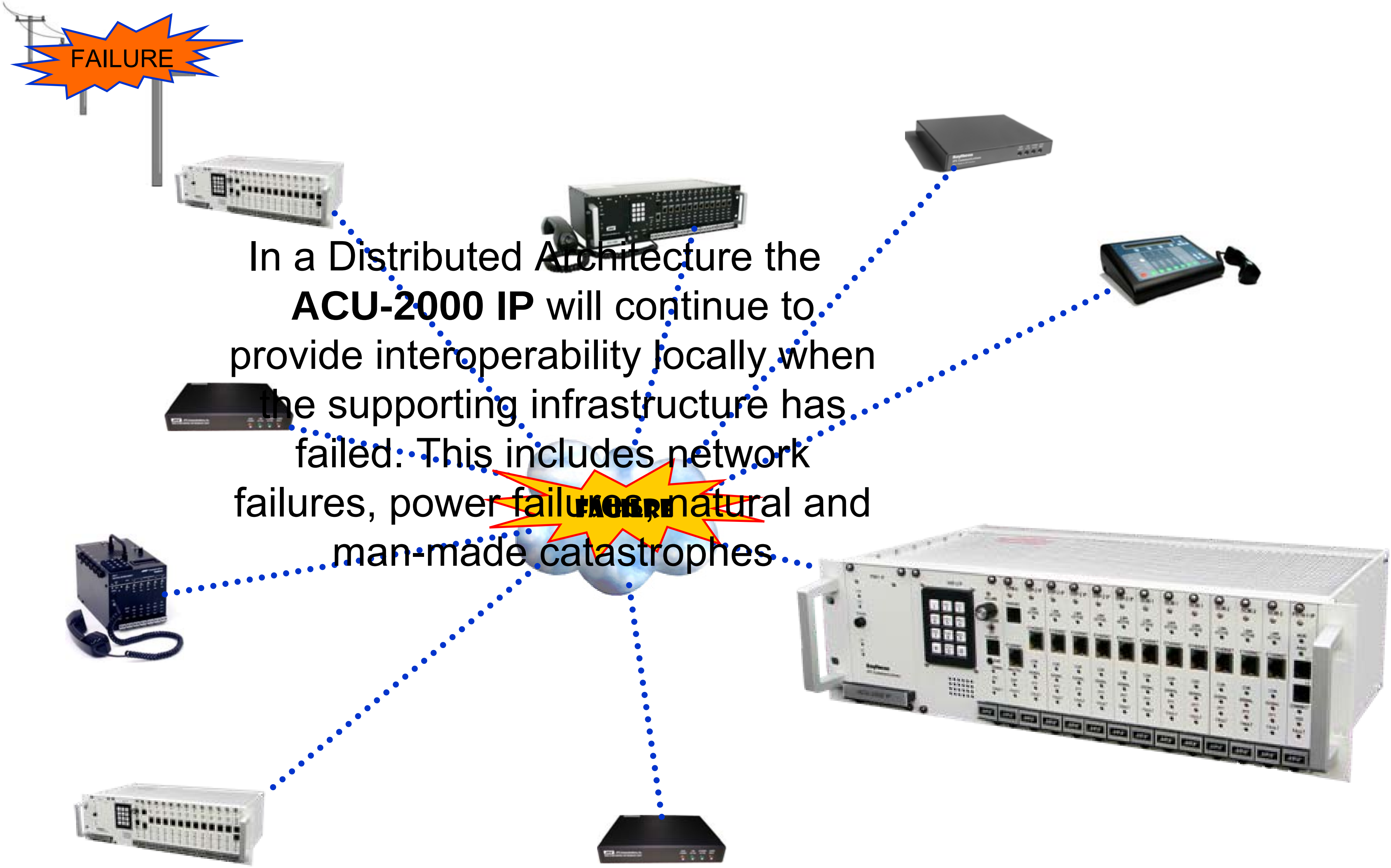


In a Distributed Architecture the **ACU-2000 IP** will continue to provide interoperability locally when the supporting infrastructure has failed. This includes network failures, power failures, natural and man-made catastrophes.

ACU-2000 IP

Server-Based Interoperability Version

Server-Based Interoperability Version

– The ACU-2000 IP interfaces land mobile radios and other 4-wire devices directly to the IP network, where interoperability takes place within a SIP PBX server

– This Server-Based Architecture is the most flexible form of interoperability, because it all happens in the IP domain

– Server-Based Architecture assigns each radio system or 4-wire device its own unique IP address or SIP Extension

– With SIP's standards-based open protocol, customers can develop applications that can control and operate the ACU-2000 IP

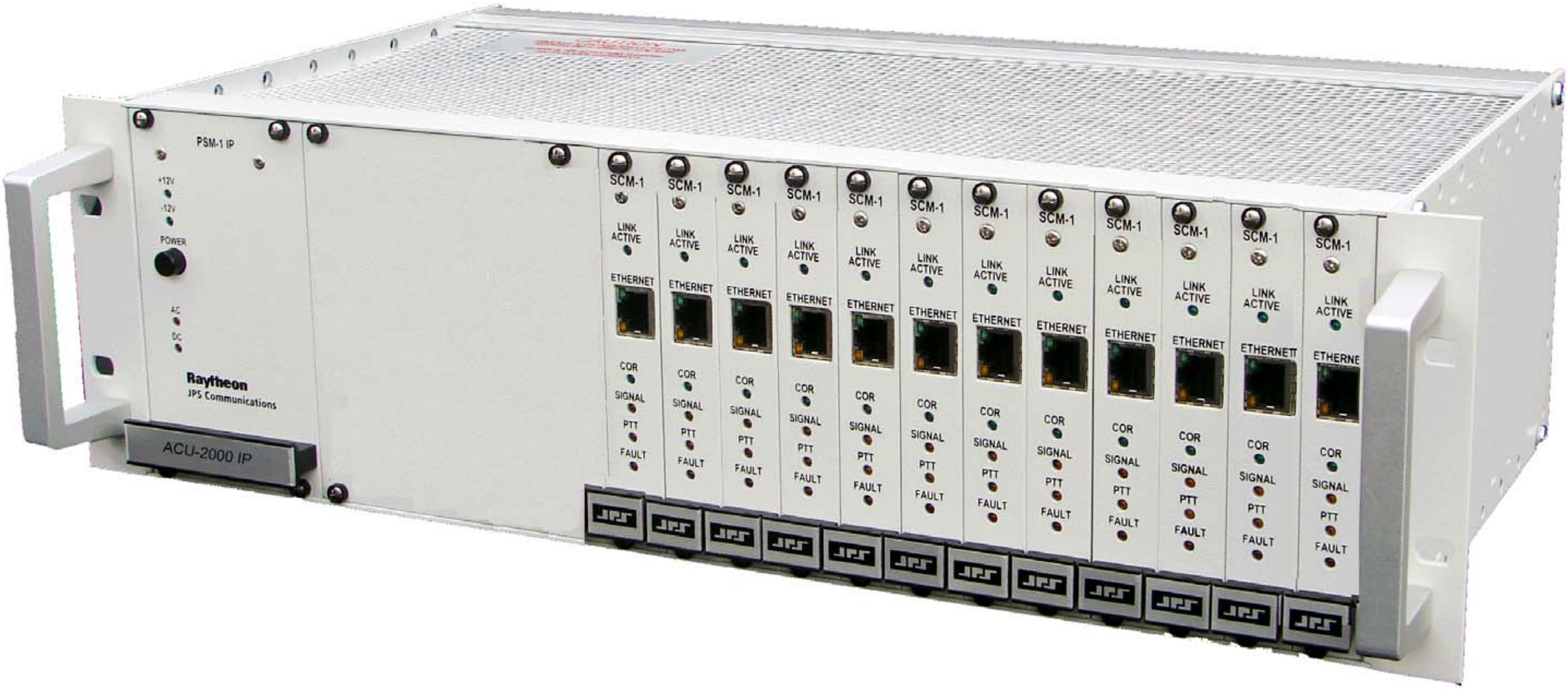
Server-Based Interoperability Version

- – Unlike the Local Interoperability Gateway Version, there is no local interoperability within the Server-Based Interoperability Version

- – Interoperability occurs within a centralized SIP Proxy Server & SIP PBX

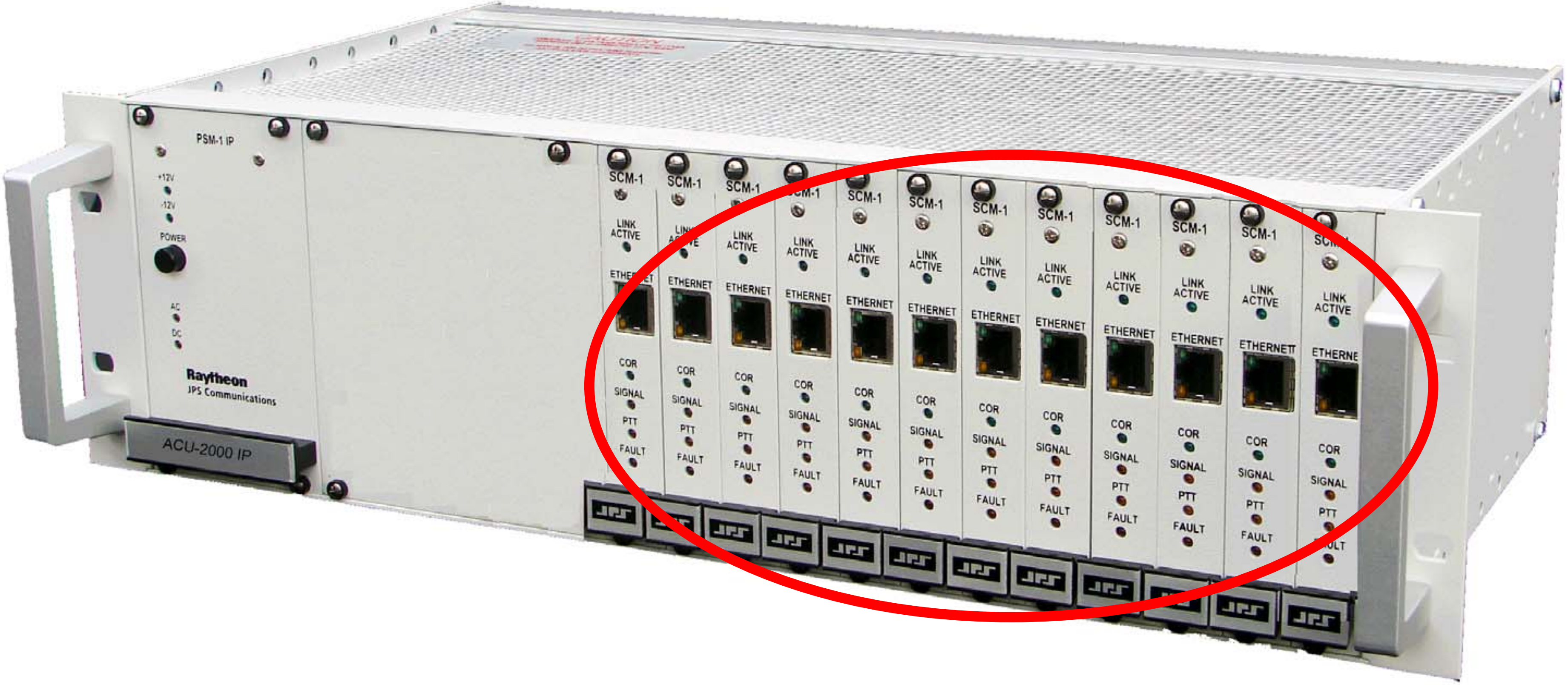
Server-Based Interoperability Version

- This version does not require the CPM-6 or HSP-2A IP module
- This version uses only SCM-1 modules that function similar to the standalone ARA-1 module
- Remote audio links compose of SIP/RTP only, no RoIP



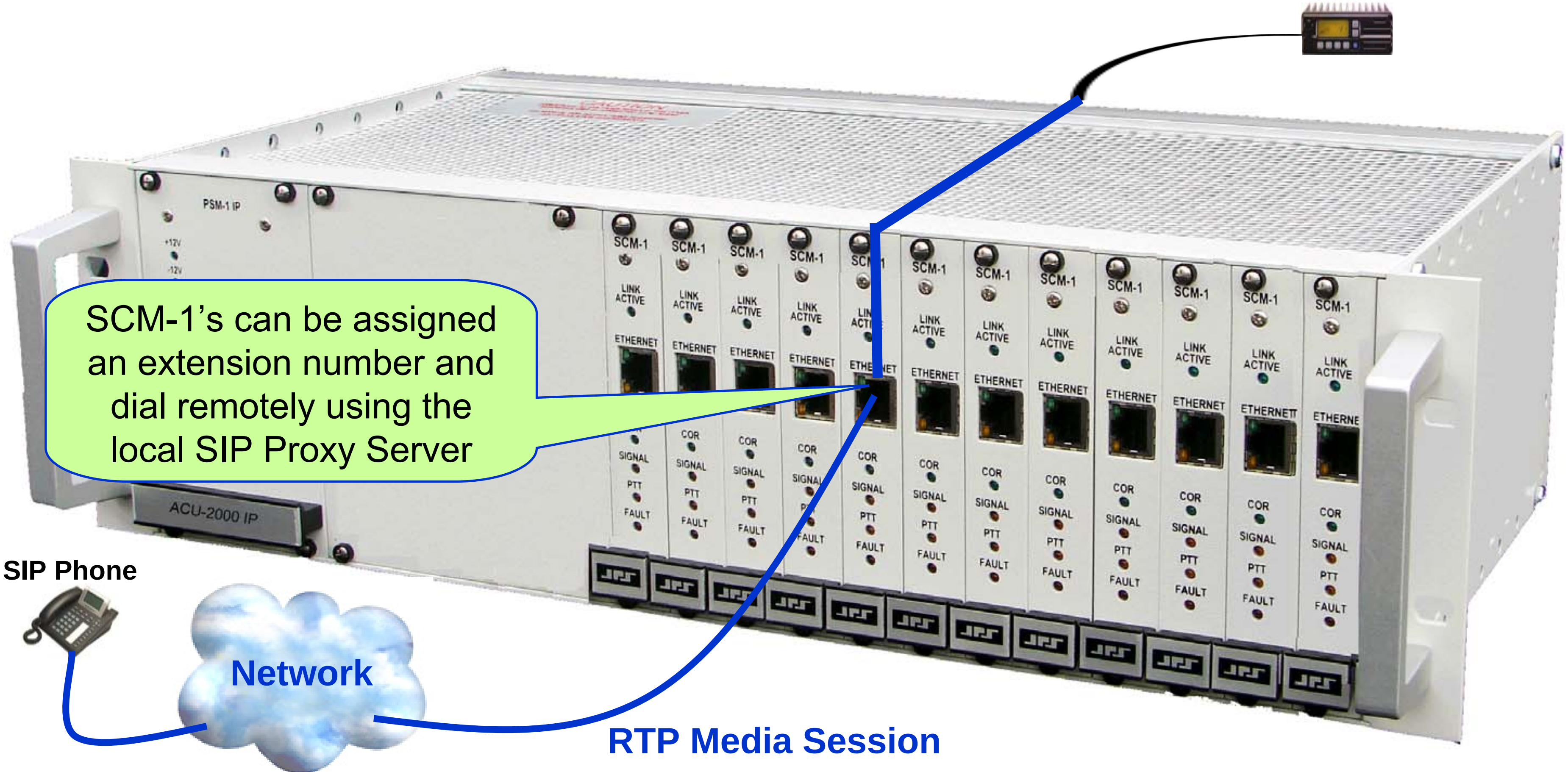
Local Interoperability Gateway Version

- SCM-1 Module: becomes a SIP end point
  - Similar to a SIP phone, the SCM-1 can be assigned a SIP Extension number
  - Other SIP devices can initiate a SIP connection to the SCM-1 and create a SIP media session



Server-Based Interoperability Version

- The SCM-1 Module: Derives audio from radio or 4-wire devices connected to the rear DB-15 connection directly behind each module, and then digitizes the audio into RTP packets to be directly presented to the IP network



SCM-1's can be assigned an extension number and dial remotely using the local SIP Proxy Server

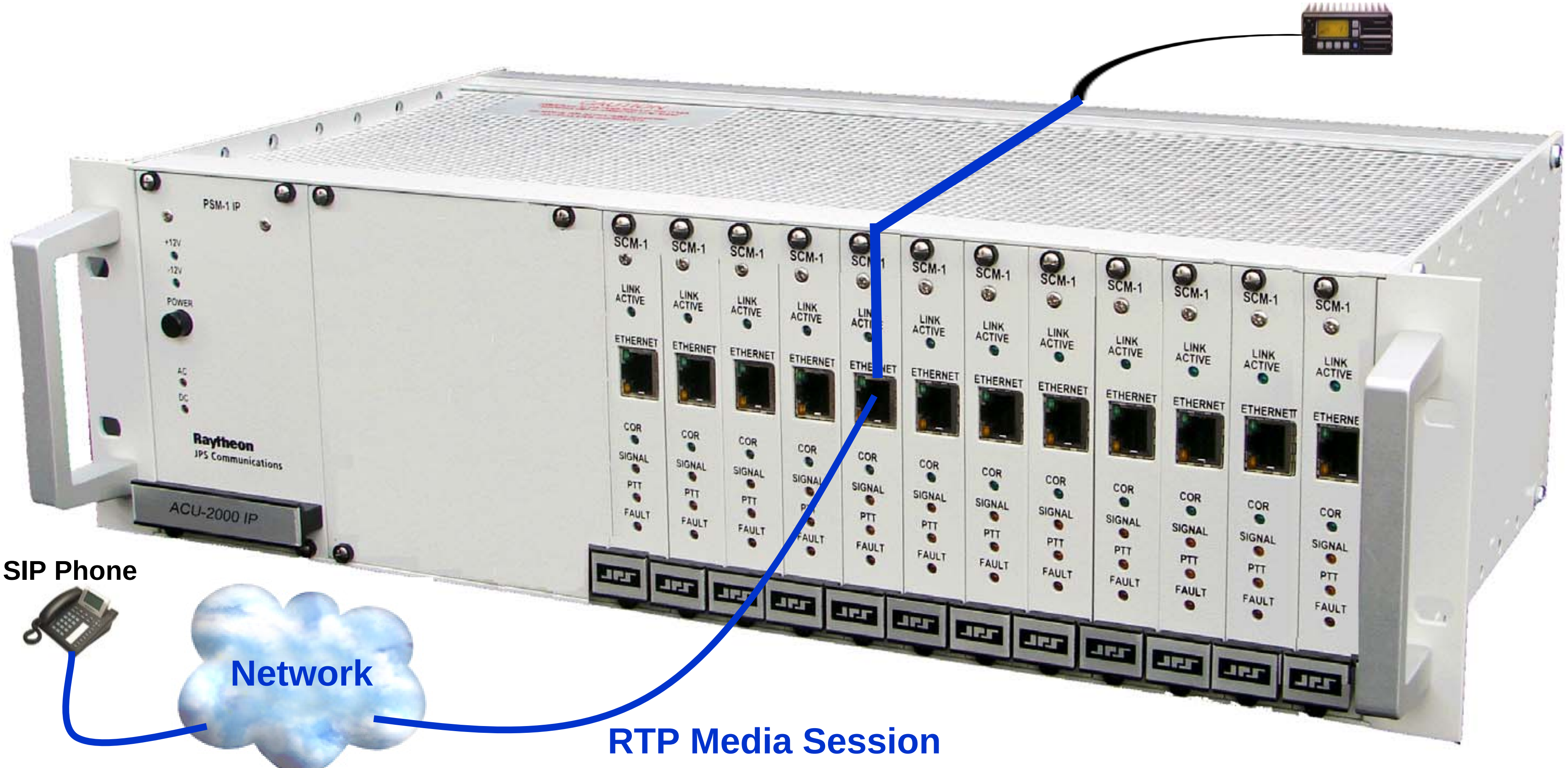
SIP Phone

Network

RTP Media Session

Server-Based Interoperability Version

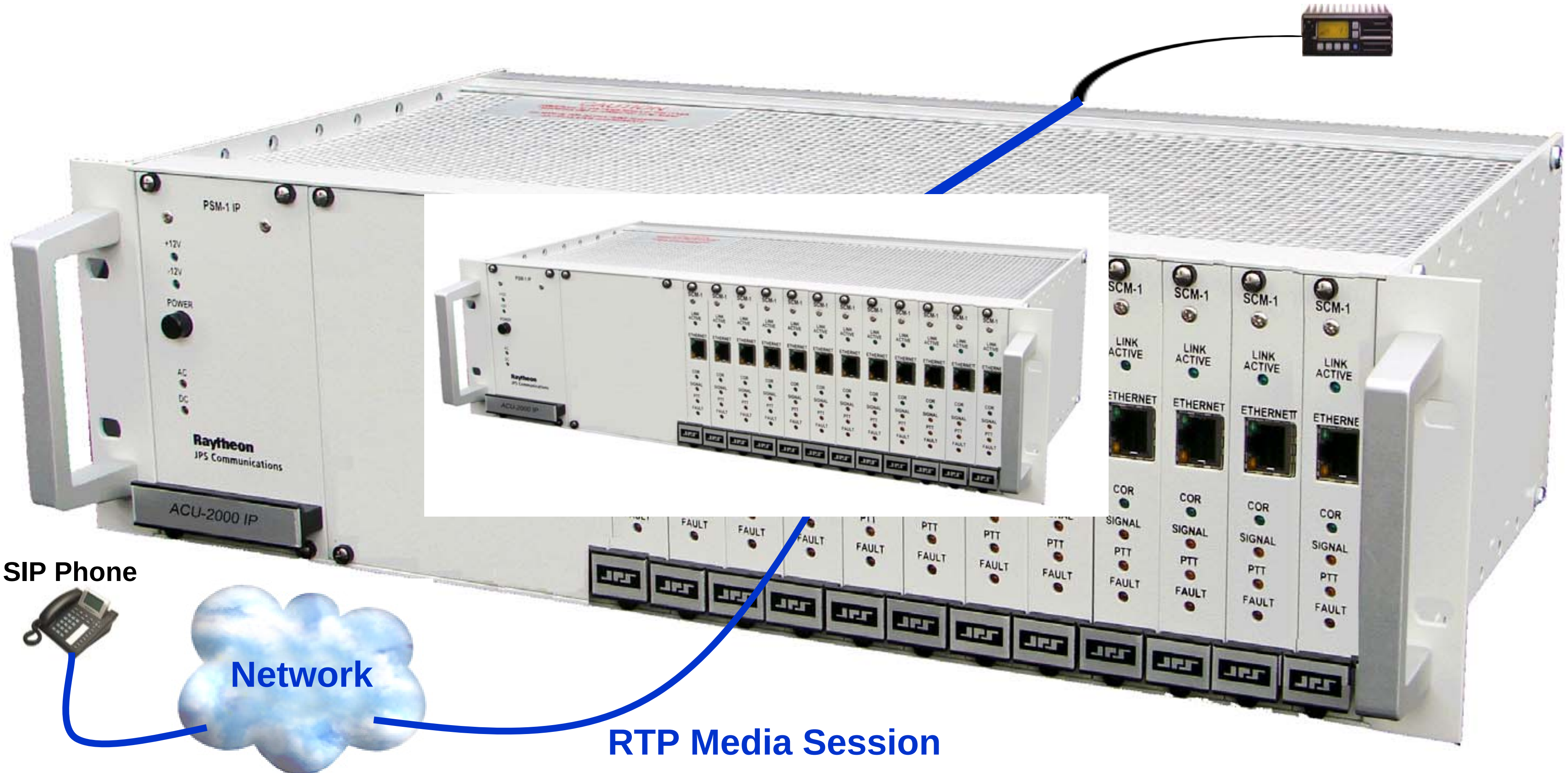
…so, any radio or 4-wire device connected to an SCM-1 can be associated with a unique IP address or better yet, a SIP Extension Number



Server-Based Interoperability Version

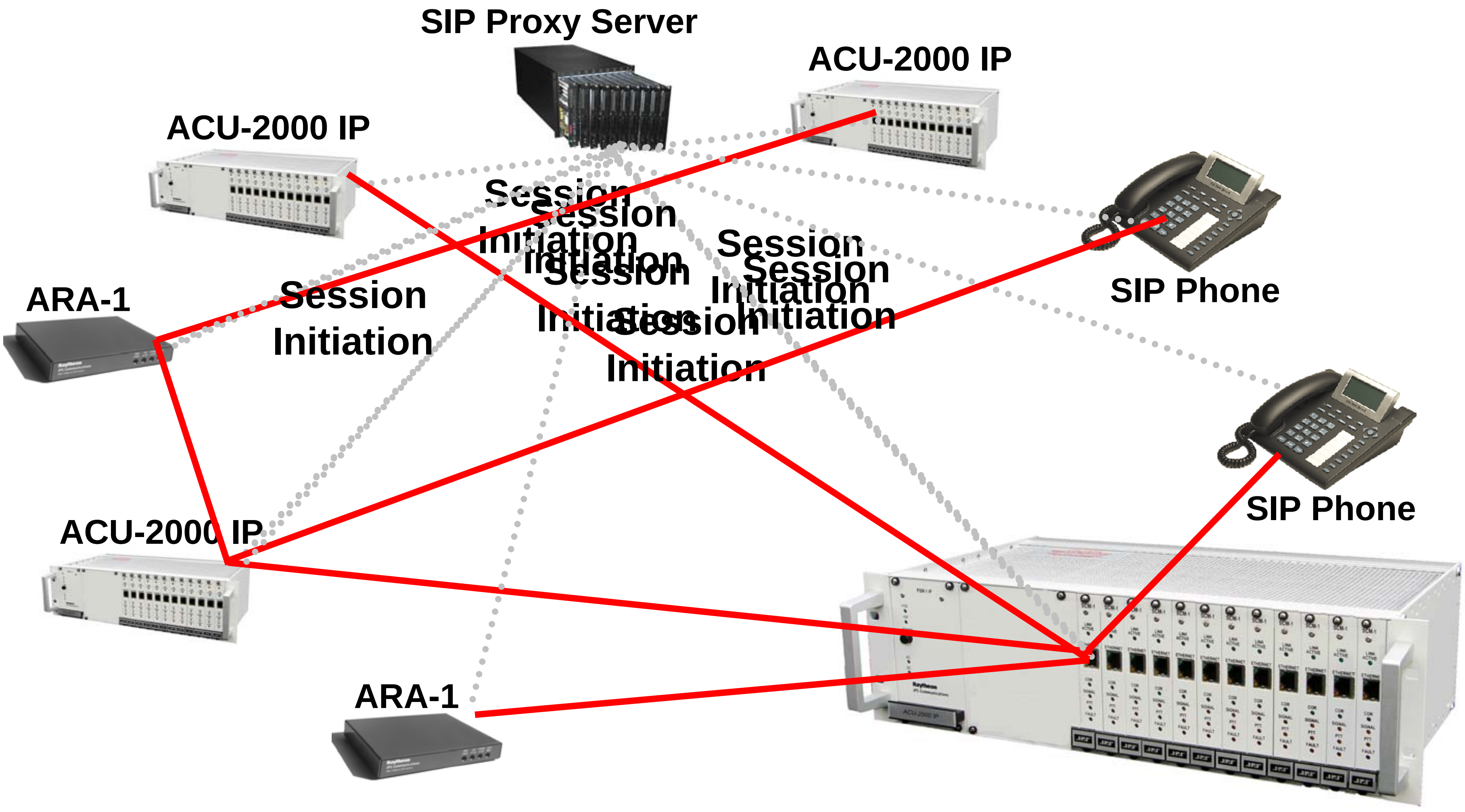
…since the connected radios are associated to SIP Extensions they can now take advantage of SIP Telephony functions:

- Direct Inward Dialing (DID), Conferencing, Voice Mail, Call Forwarding, Interactive Voice Response (IVR), Auto Attendant, and much more…



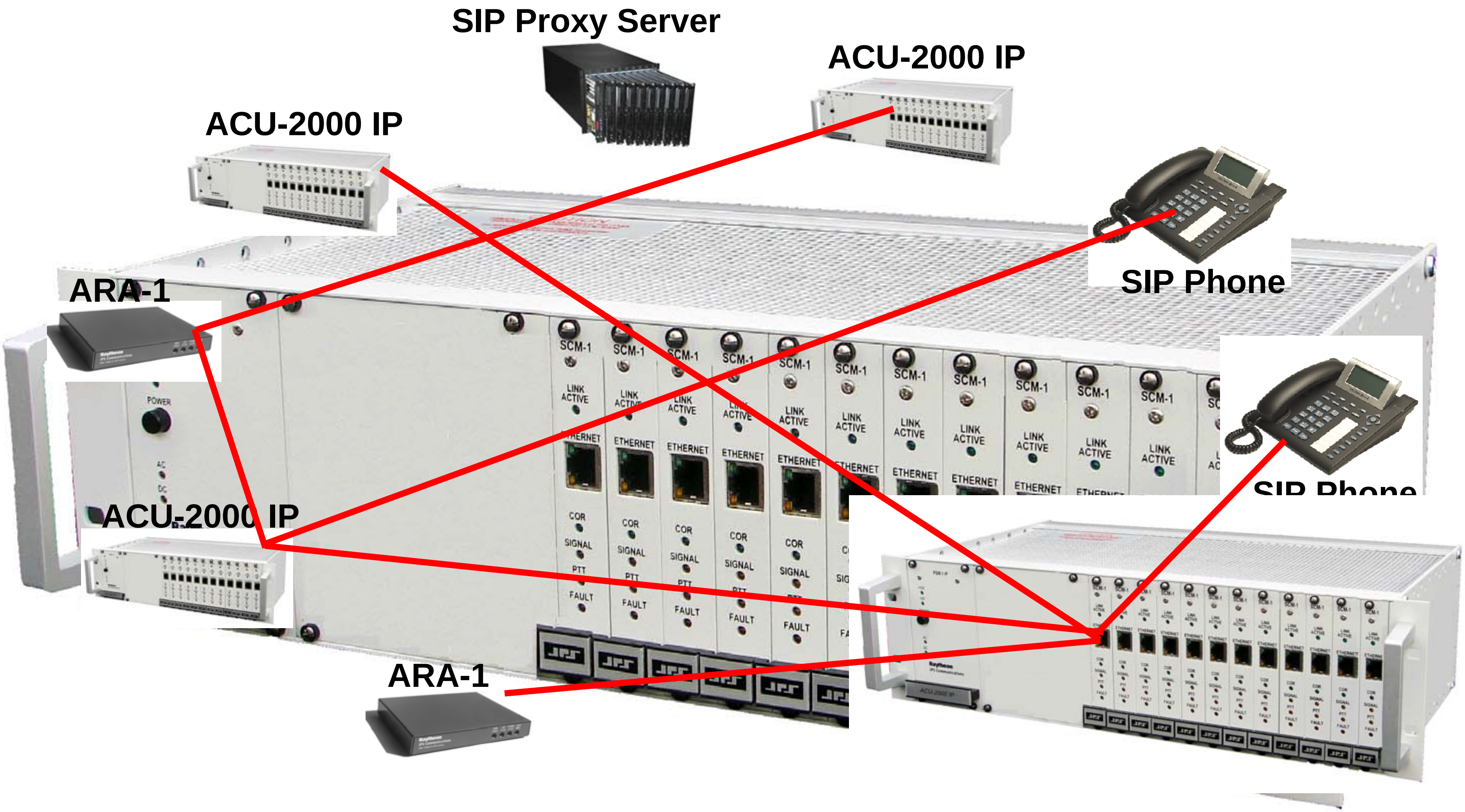
Server-Based Interoperability Version

…simply add a SIP Proxy Server with PBX functions



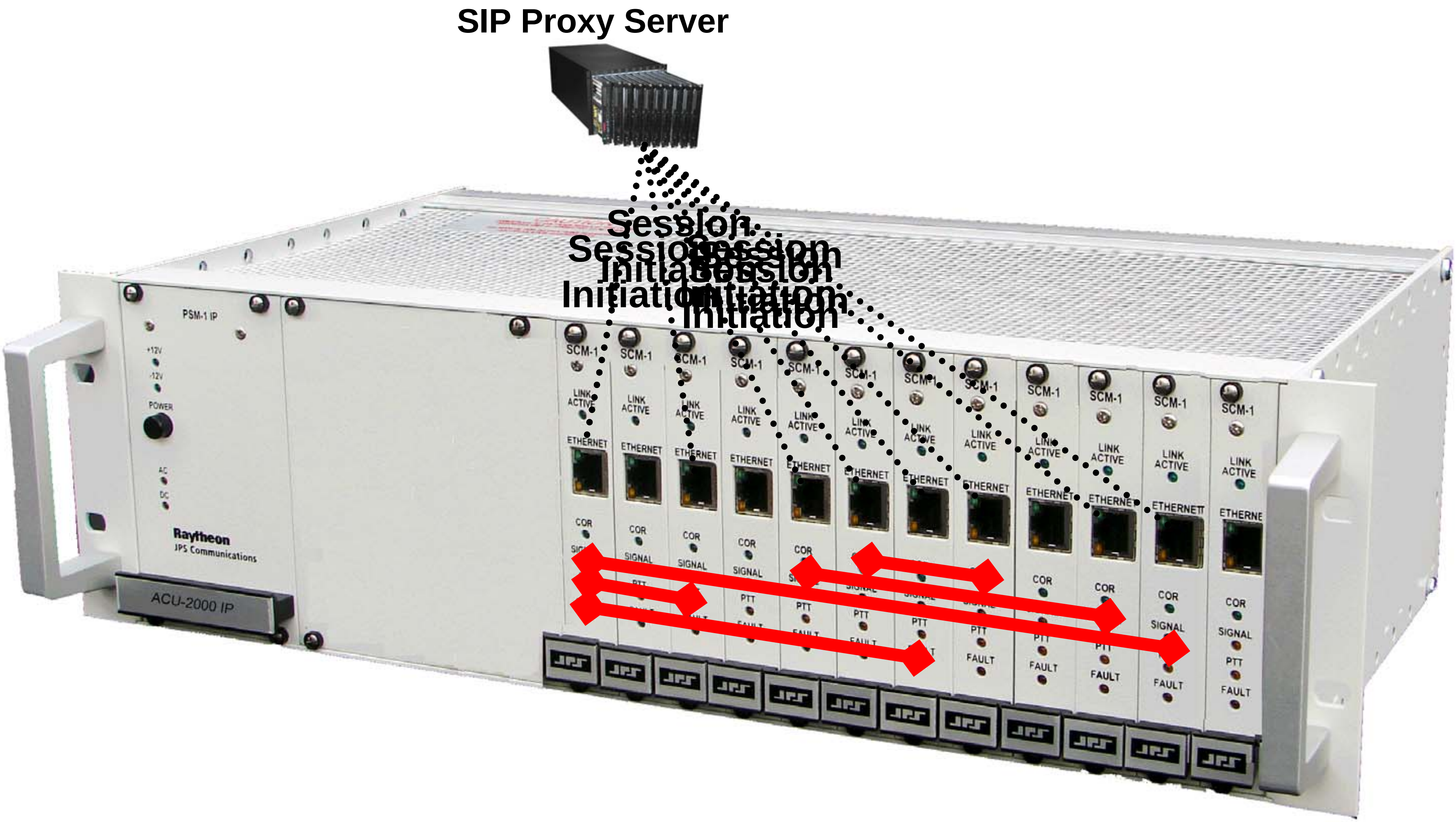
Server-Based Interoperability Version

…Local Interoperability sessions are initiated by the centralized SIP Proxy Server



Server-Based Interoperability Version

…Local Interoperability sessions are initiated by the centralized SIP Proxy Server



Server-Based Interoperability Version

– Control of the ACU-2000 IP / Server-Based Version:

- Cross-Connections, local and remote, are arbitrated by the SIP Proxy Server
- A unique application might look and act like the ***ACU Controller*** or ***WAIS Controller*** to be based on a Standards-Based, Open Protocol SIP PBX Linux application can control the Server-Based ACU-2000 IP….

…like the Raytheon JPS Communications “Radio Server” Application?

ACU-2000 IP

The use of SIP, a Standards Based, Open-Protocol will allow land mobile radios to take advantage of the extensibility and rich features of today’s Networks and IP Telephony

ACU-2000 IP

- Ship Date: April 10, 2007 and beyond
- ACU-1000 “Upgrade Kit” – CD and documentation to assist adding CPM-6 and SCM-2 modules to an existing ACU-1000 chassis
- ACU-2000IP Resource CD – Contains new ACU Controller, new manuals, App Notes, any other useful information

ACU-2000 IP

Questions?

Return to Introduction